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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/776,855	02/06/2001	Hiroaki Hashigaya	040302/0255	6842

22428 7590 03/10/2003

FOLEY AND LARDNER
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER

DOROSHENK, ALEXA A

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 03/10/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/776,855

Applicant(s)

HASHIGAYA ET AL.

Examiner

Alexa A. Doroshenk *10-20*

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group 1, claims 2-6 as well as linking claims 1 and 7 in Paper No. 5 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Specification

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: There is no indication of where in the catalyst unit the "spot" where "the maximum temperature is generated" (claim 4).

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "the spot of said catalyst unit where the maximum temperature is generated" (claim 4) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

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art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The physical location of "a spot of said catalyst unit where the maximum temperature is generated" is not indicated in the specification or drawings.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 2 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claims 2 and 5 recite the limitation "said first reaction state detectors" in lines 1 and 2 of the claims. There is insufficient antecedent basis for this limitation in the claim. The examiner notes that only a single first reaction state detector has been recited in claim 1.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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10. Claims 1, 3, 4, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinohara et al. (4,002,150) in view of Wilson (6,117,577).

With respect to claims 1 and 7, Shinohara et al. discloses an apparatus comprising:

a reformer having a catalyst unit including a catalyst promoting steam reforming (11) and a catalyst for promoting a partial oxidation reaction (9);

a fuel supplier (61) to said unit;

an oxidation gas supplier (7,8) to said unit;

a first reaction state detector (15) upstream of the suppliers in the catalyst unit;

a second reaction state detector (16) in the whole of the catalyst in the catalyst unit; and

a corrector (17) which corrects/controls the amounts of fuel and oxidation gas which are supplied to the catalyst unit based on what is detected by the first or second reaction state detector (col. 2, lines 64-66, col. 3, lines 19-24 and lines 37-40).

Though Shinohara et al. discloses a single corrector, it functions as the two separate correctors recited since it corrects feed amounts in response to both detectors. In addition, it is held that a single corrector is an obvious expedient over two separate correctors as the mere integration of parts. In re Larson, 144 USPQ 347 (CCPA 1965).

Shinohara et al. discloses wherein the fuel supplied is a liquid fuel, not a gas as claimed.

Wilson teaches wherein gaseous fuel or liquid fuel can be converted using steam reforming and partial oxidation (col. 5, lines 62-67). It would have been obvious to one

of ordinary skill in the art at the time the invention was made to select a gaseous fuel to be used in the apparatus of Shinohara et al. as it is merely the selection of starting materials known to be effective in the art.

With respect to claims 3 and 6, the first and second reaction state detectors detect a temperature (col. 3, lines 19-20 and lines 37-39).

With respect to claim 4, absent applicant's clarification (as required above) of where in the apparatus "a spot of said catalyst unit where the maximum temperature is generated", it is held that it would have been obvious to one of ordinary skill in the art at the time the invention was made to place the temperature detector of Shinohara et al. in the known highest temperature location of the catalyst unit detectors in order to avoid reaction failure of the reformer.

11. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinohara et al. (4,002,150) as applied to claim 1 above, and further in view of Negishi (6,165,633).

With respect to claim 2, Shinohara et al. discloses wherein said first detector (15) is provided in communication with the corrector (17) which in turn switches switchers (valves, 61, 63 and 64) in response to conditions detected (col. 3, lines 19-24).

Sinohara et al. also recognizes the need for the catalyst bed to not fall above or below the optimal temperature required for the reactions to occur (col. 3, lines 52-62)

Sinohara et al. is silent as to multiple detectors (though applicant has unclearly recited multiple detectors as stated in the 35 USC 112, second paragraph rejection above).

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Negishi discloses wherein it is known to have varied temperature across a reformer catalyst bed (col. 31, lines 29-56) and wherein temperature readings are taken across the bed to determine such temperatures (see fig. 13). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide multiple detectors in the catalyst unit of Sinohara et al., since Negishi recognizes that the catalyst unit can have varied temperature throughout the bed, to ensure that no portion of the catalyst bed fall out of the desired temperature ranges required by Sinohara et al.

With respect to claim 5, as Sinohara et al. is modified as above having provided multiple detectors, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the controller/corrector to respond accordingly to the highest temperature of the multiple detectors in order to avoid reaction failure of the reformer.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa A. Doroshenk whose telephone number is 703-305-0074. The examiner can normally be reached on Monday - Thursday from 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are 703-

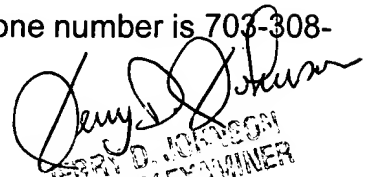
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872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


JERRY D. JOHNSON
PRIMARY EXAMINER
GROUP 1100



AAD

March 5, 2003